

BAREBONES KITS

INTRODUCTION

It's often better to build your own PC rather than buy one pre-assembled. You'll have more control over the size of the case and the exact specifications. You can opt for the latest components or use parts cannibalised from an existing computer.

If you're daunted by the thought of getting your hands dirty, don't be, as a barebones kit can make the whole process much easier. You'll get a case with a motherboard and power supply usually pre-fitted, so you don't have to start from scratch. Detailed instructions are also provided to help you fit the other components. Barebones kits are often much smaller than standard PCs, so they'll take up less desk or floor space.

This month we've gathered together nine barebones kits. So, whether you want to build a PC for office work, gaming or recording TV shows, we'll help you pick the right one.

Don't miss our Labs test of processors next month, when we'll be reviewing all Intel's and AMD's latest models.

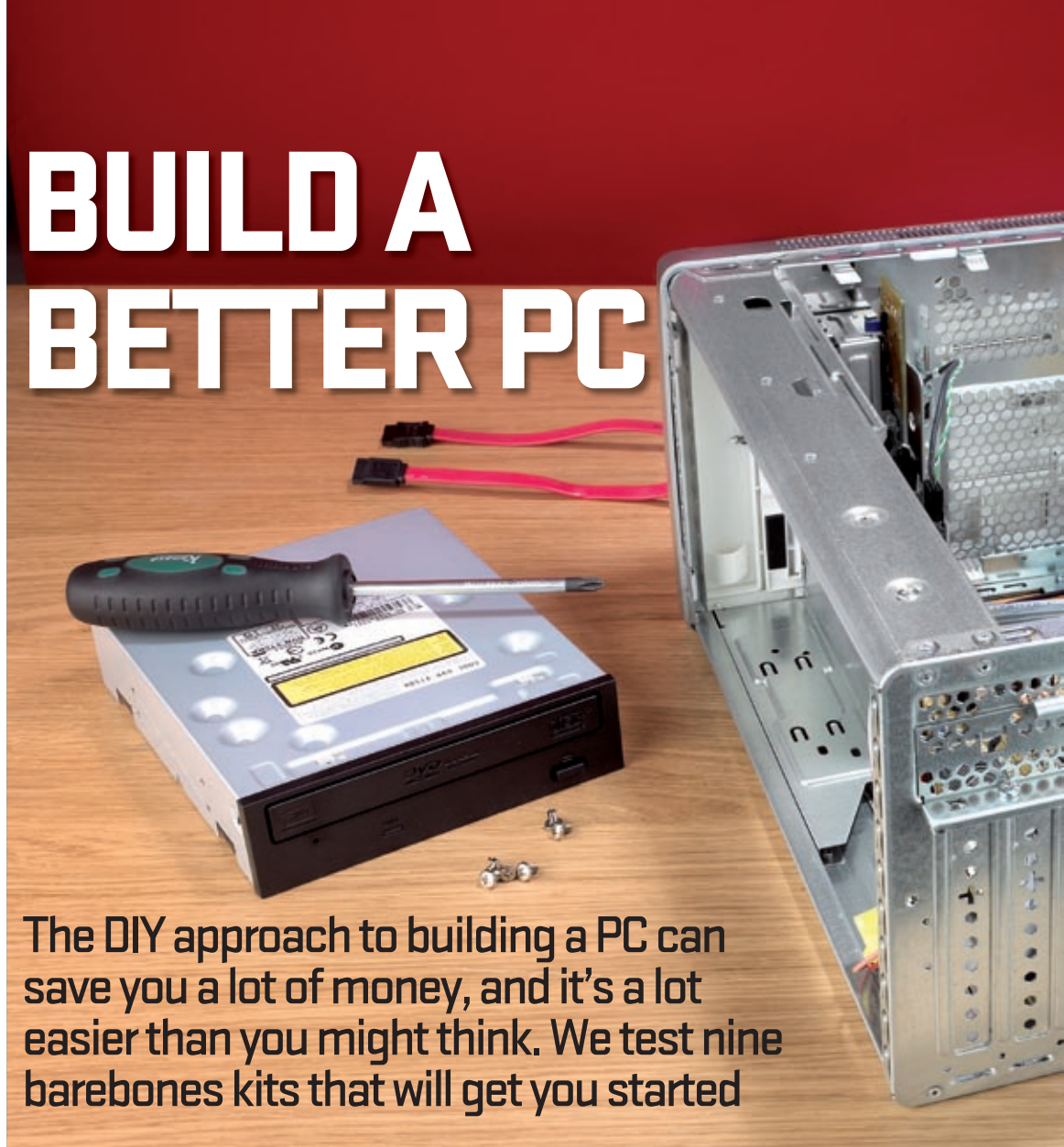
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BUILD A BETTER PC



The DIY approach to building a PC can save you a lot of money, and it's a lot easier than you might think. We test nine barebones kits that will get you started

Choosing a... Barebones Kit

Choosing a barebones kit is easier if you know what you want to do with your PC once it's built. Some kits are designed for general-purpose use, such as office work and browsing the web. These kits tend to be inexpensive but are ill-suited for gaming since they typically don't have enough room, or often even a PCI Express x16 slot, for powerful graphics cards.

A few barebones kits designed for gaming not only fix these shortcomings but may also support technologies such as CrossFire, which pairs two graphics cards together for better 3D performance, and Dolby Digital Live, for better audio in games.

Some barebones kits are designed for use as a media centre PC. These allow you to record your favourite TV shows and manage your media collection using a remote control. They tend to be quiet and small, with video and audio outputs to hook up your TV and audio equipment. They also tend to have front-mounted displays for showing information such as the currently selected TV channel or music track being played. Our reviews tell you which kits are suitable for each job.

BUILDER'S TRADE

Barebones kits tend to be small and easy to build, but the smaller they are the less room they'll have for

internal upgrades. It's important to choose one with enough space for the disks and expansion cards you'll want to fit in future. Most barebones kits use non-standard motherboards, so they can't be replaced if they don't have the features you want. Some kits also use custom heatsinks and fans, which also can't be replaced if they're too noisy. The full specifications of each kit are listed in the table on page 106.

Three of the kits here support Socket AM2 processors, such as the AMD Athlon 64 X2. Five support Socket LGA775 processors, such as Intel's popular Core 2 Duo. Only one accepts Socket M processors, which are designed for use in laptops, such as the Core Duos and certain versions of the Core 2 Duo range. The processors that can be used by each kit are also listed in the table. Check the manufacturer's website for a full list of supported processors before you buy, though, to avoid any disappointment.

All the kits in our group have at least two RAM slots, but some have four, which is useful since you might otherwise have to dispose of your existing memory to fit more. The amount of memory and the memory speeds supported vary from kit to kit; the full details are listed in the table. All the kits here use standard desktop DDR2 DIMM modules, except HFX's mCubed,



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SHUTTLE SX38P2 Pro

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INTEL MOBILE BAREBONES

HFX mCubed Micro M1 Mini-ITX
Fanless Bundle System

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which uses DDR2 SODIMM modules designed for laptops. Seven of the kits support up to 4GB of RAM and two support up to 8GB, although this is of little use currently as 32-bit versions of Windows can only use around 3.5GB.

GRAPHIC NOVEL

All the kits in our group apart from Shuttle's SX38P2 Pro come with an integrated graphics chip, so there's no need to buy a dedicated graphics card unless you want to play 3D games or use more than one monitor. Each kit has a VGA socket for connecting a monitor, while some also have DVI connectors. Three also have HDMI ports for hooking up a high-definition TV, although these can also be used to connect a DVI monitor using an HDMI-to-DVI adaptor. MSI's Media Live is the only kit in our group to have S-video, composite, component and SCART outputs, so you should have no trouble connecting it to a TV or projector.

A dedicated graphics card is a necessity for playing 3D games. All the kits in this round-up apart from HFX's mCubed have a PCI Express x16 card slot. However, Asus's P3-P5G33 only has room for a half-height card, MSI's slot is blocked and none of the barebones kits here has space for double-slot cards.

Powerful graphics cards will need additional power via a six-pin PCI Express power connector. Most of the barebones kits in this group lack

Cost-cutters Saving money the DIY way

Using a barebones kit to build a PC can save you a fair amount of money compared to buying a similarly specified computer pre-assembled. The following table compares the cost of buying a computer based on Shuttle's SG31G2 barebones kit from Shuttle reseller

www.glowtechnology.co.uk with the cost of buying the components online and assembling them yourself. In our example, the do-it-yourself route results in a saving of nearly £70 – enough for more RAM, some software or even a dedicated graphics card.

	DIY	www.glowtechnology.co.uk
Shuttle SG31G2	£191	Included in total price
Windows Vista Home Premium (OEM)	£61.10	Included in total price
Intel Core 2 Duo E4500	£74.73	Included in total price
1GB DDR2 RAM	£26	Included in total price
320GB hard disk	£50	Included in total price
20x SATA DVD writer	£23.51	Included in total price
Total inc VAT	£426.34	£493

such a connector, so you'll need a molex-to-PCI Express power adaptor, which is available from www.maplin.co.uk for £4. Our reviews tell you which barebones kits can take a graphics card, and how easy they are to fit.

STORAGE SPACE

Due to their small size, none of the barebones kits in our group can accommodate as many hard disks and optical drives as a tower PC, so you'll need to choose your storage components carefully. Six of the kits in our round-up have space for two hard disks and one optical drive.

Five of the kits in the group have built-in memory card readers.

MSI's Media Live and the mCubed lack a standard 5¼in optical drive bay since they come with slot-loading DVD writers for laptops. The mCubed uses a 2½in laptop hard disk, but these are more expensive and have lower capacities than their 3½in desktop counterparts.

All the barebones kits in our round-up come with instructions to assist in the assembly of your PC, but some are clearer than others. Our individual reviews point out which kits are simple to build and which are frustratingly difficult.



ASUS T3-M2NC51PV

★★★★★

£100 inc VAT

From www.yoyotech.co.uk

Asus's AMD-based T3-M2NC51PV is the cheapest barebones kit here at only £100 including VAT, but it looks sophisticated thanks to its silver and white case. The single-piece case cover is a little tricky to remove, but once inside, the T3 is easy to assemble. The instruction manual is clearly illustrated with black-and-white diagrams that note how many screws have to be removed and in which direction they have to be unscrewed.

A cage containing the hard disk bays and 250W power supply swings out of the way to give unobstructed access to the processor socket and RAM slots. There's a PCI slot for expansion cards, such as TV tuners and wireless networking adaptors. There's also a PCI-E x16 slot, but you can't add a full-length graphics card as the memory card reader is in the way. As the reader also contains the power switch connector, you can't remove it as you wouldn't be able to turn your PC on.

Asus has supplied its own processor heatsink that screws into the motherboard, rather than using the standard clip fixtures usually found on AMD heatsinks. You'll need to use a long crosshead screwdriver to reach the screws. Unfortunately, it was noticeably loud and the non-standard fittings make it difficult to find a replacement cooler that isn't as noisy.

The T3-M2NC51PV's performance in our Windows benchmarks was in line with what we'd expect and it tied with Shuttle's SN68PTG6 Deluxe as the fastest AM2-based barebones kit in our group. As expected, the integrated graphics weren't powerful enough for playing the latest games.

Asus's T3-M2NC51PV is an attractive option if you want a cheap barebones PC system for building an office PC. It's noisy, though, and unless you have to use an AM2 processor, Asus's own T3-P5945GC is a better choice. It's almost identical to the T3-M2NC51PV but it uses Intel rather than AMD processors and it isn't as noisy.

SUMMARY

- ✓ Easy to assemble
- ✓ Cheap; attractive
- ✗ Noisy

BAREBONES KIT Socket AM2 processor socket, 4x DDR2 667/800 DIMM slots, Nvidia GeForce 6150 graphics, 1x PCI-E x16, 3x SATA ports, 1x 10/100/1,000 network, 6x USB2 ports, 2x FireWire ports, 7.1 audio, 1x 5¼in bay, 2x 3½in bays
PART CODE T3-M2NC51PV
DETAILS www.asus.com



SHUTTLE SN68PTG6 Deluxe (Glamor Series)

★★★★★

£241 inc VAT

From www.lambda-tek.com/componentshop

The SN68PTG6 Deluxe is the only Shuttle barebones kit here to support AMD processors. Neither the one-piece case cover nor the cage for housing the hard disk and optical drive are difficult to remove, but the well-illustrated colour wallchart is easy to follow if you need help building it.

Like Asus's T3-M2NC51PV, the SN68PTG6 doesn't use a standard clip-on AMD heatsink. Fortunately, the proprietary combined fan-heatsink assembly is very quiet and straightforward to unscrew and remove.

The SN68PTG6 is designed for Windows Media Center and even comes with a remote control. The receiver for the remote is built-in, which makes for a tidier look. There's an optical S/PDIF port for connecting a surround-sound amplifier, and there's support for DTS Connect and Dolby Digital Live.

There's an HDMI port for hooking up a high-definition TV, but you'll need to add a dedicated graphics card if you want smooth HD playback as the integrated graphics chip isn't up to the task. The cramped interior of the SN68PTG6 doesn't leave enough room for a double-slot PCI-E x16 graphics card or one with a large fan, and you'll need a molex-to-PCI Express adaptor to power your card.

The SN68PTG6's extra features include built-in wireless networking, Bluetooth and a fingerprint reader. The onboard graphics failed our 3D tests, but you can play games if you fit a dedicated card – we achieved a respectable 36.1fps in our Call of Duty 2 test when fitted with our Radeon X1950 Pro. It also performed well in our Windows benchmarks.

If you want to build a Media Center PC, the SN68PTG6 is excellent value and comes with everything you need.

SUMMARY

- ✓ Easy to assemble
- ✓ Quiet; integrated remote control receiver
- ✗ Onboard graphics can't handled HD

BAREBONES MEDIA CENTRE PC KIT Socket AM2 processor socket, 2x DDR2 533/667/800/1066 DIMM slots, Nvidia GeForce 7050PV graphics, 1x PCI-E x16, 2x SATA ports, 1x 10/100/1,000 network, 6x USB2 ports, 2x FireWire ports, 7.1, Dolby Digital Live, DTS Connect audio, 1x 5¼in bay, 2x 3½in bays
PART CODE SN68PTG6 Deluxe
DETAILS www.shuttle.eu



MSI Media Live

★★★★★

£250 inc VAT

From www.ebuyer.com

Like Shuttle's SN68PTG6, the Media Live is designed for use with Windows Media Center. It's designed to look like a set-top box, so it should fit neatly into a living room. The top of the case comes off easily and almost all the headers, slots and bays are easily accessible. The manual has some badly written sentences but is still easy to follow and comprehensive, even covering BIOS options and using Windows XP Media Center.

Annoyingly, the RAM slots are incorrectly colour coded for adding memory in dual-channel mode. A memory card reader is built in and there's room for two hard disks inside an easily removable cage.

Like Shuttle's SN68PTG6, the Media Live has a front-mounted display for showing information such as the currently playing music track. The receiver for the included Windows Media Center remote is built in so it doesn't occupy a USB port.

You should have no trouble connecting the Media Live to your TV, as it has HDMI, SCART, S-video, component and composite outputs. There are also optical and coaxial S/PDIF ports for hooking up a surround-sound amplifier.

The included slot-loading DVD writer is useful and looks smart, but the burner is a laptop component instead of a standard 5¼in desktop drive. Replacing it in the future with a Blu-ray optical drive could be costly as laptop drives are expensive, but we wouldn't recommend it in any case. The integrated graphics chip isn't powerful enough to play HD movies smoothly.

Upgrading the graphics card is impossible. A riser card is required, so that expansion cards can be fitted horizontally, but the riser has only a PCI slot on it, even though the motherboard has a PCI-E x16 slot.

MSI's Media Live is a good choice for a Media Center PC, but Shuttle's SN68PTG6 is cheaper, has an accessible PCI-E x16 slot and an easier optical drive to upgrade.

SUMMARY

- ✓ Easy to assemble; integrated remote receiver
- ✓ Plenty of video outputs; DVD writer included
- ✗ No room for dedicated graphics card

BAREBONES MEDIA CENTRE PC KIT Socket AM2 processor socket, 4x DDR2 533/667/800 DIMM slots, Nvidia GeForce 6150 graphics, 1x PCI-E x16, 4x SATA ports, 1x 10/100/1,000 network, 6x USB2, 2x FireWire, 7.1 audio, 2x 3½in bays
PART CODE MS-6421-020
DETAILS www.msi.com.tw



ASUS
T3-P5945GC

★★★★★

£108 inc VAT
From www.scan.co.uk

BUDGET BUY Asus's T3-P5945GC has the same attractive white and silver appearance as the company's AMD-based T3-M2NC51PV (opposite). This similarity is more than skin deep, and the procedure for installing components in each is exactly the same, except that this kit takes Intel LGA775 processors.

The similarity between the T3-M2NC51PV and the T3-P5945GC is no bad thing, as both kits are easy to build. The two are so similar that they share the same instruction manual, with different pages covering the variations between each model. The black-and-white diagrams are easy to follow and cover building your PC in great detail.

The cage containing the two hard disk bays and power supply swings out of the way to give easy access to the motherboard. Unlike the T3-M2NC51PV, which has four RAM slots, the T3-P5945GC has only two, but this isn't a critical limitation as it has the same 4GB of RAM limit as the T3-M2NC51PV.

The T3-P5945GC has the standard Intel cooler mount. You don't get a cooler in the box, but we found that a stock Intel model was unobtrusive and quiet. There's a PCI-E x16 slot, but our full-length test graphics card wouldn't fit, as the memory card reader is in the way. As this also contains the power switch connector, it's impossible to remove it. The T3-P5945GC has a single PCI slot for expansion, which is handy if you want to add a TV tuner or wireless network adaptor.

Performance was very good, and the T3-P5945GC was the third fastest Intel-based barebones kit in our *Shopper* application benchmark tests.

Although the T3-P5945GC isn't perfect, it's one of the best LGA775 barebones kits in our group. It's easier to build than Asus's cramped P3-P5G33 and it's almost £100 cheaper than Shuttle's SG31G2. It's a great choice if you want a cheap, easy-to-build barebones system and don't want to fit a high-end graphics card.

SUMMARY

- ✓ Easy to assemble
- ✓ Quiet and attractive
- ✓ Inexpensive

BAREBONES KIT LGA775 processor socket, 2x DDR2 533/667 DIMM slots, Intel GMA 950 graphics, 1x PCI-E x16, 3x SATA ports, 1x 10/100/1,000 network, 6x USB2, 2x FireWire, 7.1 audio, 1x 5¼in bay, 2x 3½in bays
PART CODE T3-P5945GC
DETAILS www.asus.com



ASUS
P3-P5G33

★★★

£130 inc VAT
From www.scan.co.uk

Asus's P3-P5G33 is a similar shape and size to a large photo album. This compactness is attractive, but the cramped interior makes installing components fiddly. The removable side panel and a large metal brace covering the PCI slots are easily detachable, but there's not a lot of room inside the case to work.

Unlike the hard disk cage in MSI's Media Live, the cage in the P3-P5G33 isn't removable, so disks have to be wedged in at an angle, which is awkward. There's little space between the RAM slots and the optical drive bay, so it's easier to install your memory first, especially if you want to fill all four slots.

There's no cooler provided, but the standard mount takes any normal cooler. We fitted a stock Intel cooler, which was quiet when the PC was idle but incredibly loud during any intensive tasks.

Although there is a PCI Express x16 graphics card slot alongside two PCI and one PCI Express x4 slots, all the expansion card slots are half-height, which restricts your choice of graphics card. You can't install a high-end graphics card, but a low-profile model, such as an ATI HD 2400 Pro, could be installed for light games-playing and for watching HD movies.

You may want to do this, as the onboard graphics aren't good enough for games or HD movies. Fortunately, Windows performance was very good.

There's only a PS/2 port for the keyboard, so you'll have to use a USB mouse. However, as there are six USB2 ports – the highest number here – there's plenty more room for expansion and peripherals.

Asus's P3-P5G33 is compact and is one of the cheapest barebones kit in this group test. It's not very good value, though, as it's tricky to build and noisy when fitted with Intel's stock cooler. Asus's T3-P5945GC is a better buy if you want a space-saving barebones kit for the office.

SUMMARY

- ✓ Compact
- ✗ Tricky to build
- ✗ Noisy

BAREBONES KIT Socket LGA775 processor socket, 4x DDR2 533/667/800 DIMM slots, Intel GMA3100 graphics, 1x PCI-E x16, 4x SATA ports, 1x 10/100/1,000 network, 8x USB2 ports, 2x FireWire, 7.1 audio, 1x 5¼in bay, 2x 3½in bays
PART CODE P3-PHS
DETAILS www.asus.com



SHUTTLE
SG31G2

★★★★★

£191 inc VAT
From www.lambda-tek.com/componentsshop

The SG31G2 is the cheapest Shuttle barebones kit here, at just under £200. It's not designed for use as a media centre PC like the SG33G5M, or for gaming like the SX38P2 Pro. Even so, it's attractive, thanks to its black metal case, and is just as easy to build as the other Shuttle models.

The instructions are illustrated with colour photos and are easy to follow. The one-piece case cover is easily removable. The internal drive cage can be removed, which makes screwing in a disk straightforward. You'll need an optical drive with a black fascia to match the black case, as there's no external flap.

Like all the Shuttle barebones kits in our round-up apart from the SX38P2 Pro, the SG31G2 has a proprietary combined fan and heatsink assembly. It's held in place by a series of thumbscrews and screws and is easier to remove than a stock Intel cooler.

The SG31G2 has a PCI-E x16 slot, but its power supply lacks a PCI Express connector. As there's only one molex power adaptor, you'll need to buy a splitter and a molex-to-PCI Express adaptor with one molex connector (most adaptors have two plugs). The internal graphics failed our Call of Duty 2 test, but our X1950 Pro managed a respectable 38.2fps.

The SG31G2's performance in our Windows benchmarks was in line with what we'd expect, but it was noisy when running our tests. Although it's not as distractingly loud as Asus's P3-P5G33, it's not as quiet as Shuttle's SG33G5M.

We were impressed by the SG31G2's easy assembly and clear instructions. Although it's not the quietest barebones kit here, its small size makes it an attractive option as an office computer. The SG31G2 is a well-built and powerful barebones kit that can take a graphics card with the right adaptors. However, it's almost £100 more expensive than Asus's T3-P5945GC, which is a better choice if you don't want to play games.

SUMMARY

- ✓ Easy to assemble
- ✓ Clear and well-illustrated instructions
- ✗ Relatively expensive

BAREBONES KIT LGA775 processor socket, 2x DDR2 667/800 DIMM slots, Intel GMA3100 graphics, 1 PCI-E x16, 3x SATA ports, 1x 10/100/1,000 network, 6x USB2, 2x FireWire, 7.1 audio, 1x 5¼in bay, 2x 3½in bays
PART CODE SG31G2
DETAILS www.shuttle.eu



SHUTTLE SG33G5M (D'VO Series)

★★★★★

£270 inc VAT

From www.eclipsecomputers.com

Shuttle's SG33G5M is the best-looking barebones kit here. It's designed for use with Windows Media Center, and comes with built-in support for Dolby Digital Live and DTS Connect, an HDMI port for connecting to an HD TV and a remote control with the receiver integrated into the case. The front-mounted display shows information such as the currently playing music track and looks particularly sleek thanks to its silver coloured screen and blue LED lettering.

Assembling the SG33G5M is straightforward. It has an easily removable cover and a combined fan-heatsink.

Thankfully, the SG33G5M was much quieter than Shuttle's SG31G2 when running our benchmark tests and proved to be one of the quietest barebones kits here.

Unfortunately, the SG33G5M's integrated graphics chip isn't powerful enough to play back HD video smoothly. You can remedy this by installing your own graphics card in the PCI-E x16 slot, but you first have to change two blocks of jumpers to disable the onboard graphics. Once we did this, our frame rate of 38.1fps in Call of Duty 2 was impressive.

The SG33G5M is the only barebones kit to have overclocking controls in its BIOS, so you can squeeze a bit more performance out of your components. You shouldn't need to for normal use, though, as this system delivered some of the best benchmark results here.

We were generally impressed with the SG33G5M. It's a quiet barebones system that's well specified for use as a media centre PC. However, it's more expensive than the other media centre barebones kits here, the AM2-based Shuttle SN68PTG6 Deluxe and MSI's Media Live. Unless you must have an Intel-based media center PC, Shuttle's SN68PTG6 is the better buy.

SUMMARY

- ☒ Quiet; integrated remote control receiver
- ☒ Easy to assemble
- ☒ Expensive

BAREBONES MEDIA CENTRE PC KIT LGA775 processor socket, 2x DDR2 667/800/1066 DIMM slots, Intel GMA3100 graphics, 1x PCI-E x16, 3x SATA ports, 1x 10/100/1,000 network, 8x USB2 ports, 2x FireWire ports, 7.1, Dolby Digital Live, DTS Connect audio, 1x 5¼in bay, 2x 3½in bays
PART CODE SG33G5M
DETAILS www.shuttle.eu



SHUTTLE SX38P2 Pro (Prima Series)

★★★★★

£340 inc VAT

From www.microdirect.co.uk

Shuttle's SX38P2 Pro is one of the first barebones systems we've seen to support ATI's CrossFire technology, which allows you to run two graphics cards together for improved 3D performance.

Unlike the other Shuttle barebones kits here, the SX38P2 has a separate heatsink and fan. These are still easy to remove, but you'll need a long crosshead screwdriver to unscrew them. The close confines make it more difficult to fit components compared to the other Shuttle systems. The power supply partially overhangs the RAM slots while the PATA and SATA ports and the ATX power connector are all squeezed in closely together.

The hardest task is fitting two graphics cards in CrossFire mode. Very little space separates the two PCI-E x16 slots, so you can't fit double-slot cards or cards with large fans. Even worse is the close proximity of the power supply and the PATA port to one of the slots. We had to unplug the PATA cable to gain access to the slot and even then it took an alarming degree of force to insert the card as the power supply cables still partially obstructed the slot. The power supply has only one PCI-E power connector. A splitter is included in the box, although the otherwise comprehensive manual neglects to mention the need to connect your graphics cards to the power supply.

If you can persevere through all that, the results are impressive. When fitted with a single Radeon HD3850 card, we saw a score of 39fps in our Call of Duty 2 test. When fitted with two HD3850 cards, this jumped up to 73.2fps – an impressive improvement. Unfortunately, the SX38P2 was very noisy with both cards fitted.

Shuttle's SX38P2 Pro is your only choice if you want a compact CrossFire gaming PC, but it's loud, expensive and tricky to build.

SUMMARY

- ☒ CrossFire support
- ☒ Cramped case interior
- ☒ Loud; expensive

BAREBONES GAMING PC KIT LGA775 processor socket, 4x DDR2 667/800/1066 DIMM slots, 2x PCI-E x16, 4x SATA ports, 1x 10/100/1,000 network, 8x USB2 ports, 2x FireWire ports, 7.1, Dolby Digital Live, DTS Connect audio, 1x 5¼in bay, 3x 3½in bays
PART CODE SX38P2 Pro
DETAILS www.shuttle.eu



HFX mCubed Micro M1 Mini-ITX Fanless

★★★

£500 inc VAT

From www.quietpc.com

HFX's mCubed is very different from the more traditional barebones systems here. For starters, the motherboard isn't pre-installed. It's also the only system in our group to use Socket M for mobile Intel Core Duo and Core 2 Duo processors. You won't be able to use the latest Core 2 Duo processors, though, as these use Socket P, so check carefully before you buy.

As well as the motherboard, the internal receiver for the Windows Media Center remote and the passive cooling system for the processor also have to be installed. Screwing in the motherboard isn't difficult, but fitting the other parts is time-consuming and tricky.

The badly written documentation doesn't cover connecting the cables for the front-mounted ports, activity light and power switch to the motherboard headers. At least a crosshead screwdriver is included in the box.

You don't need to fit a power supply as the compact mCubed uses a laptop-style AC power adaptor instead. The padded enclosure for the 2½in hard disk and included laptop DVD writer helps reduce vibration and noise, but it's difficult to line up the slot-loading drive correctly with the slot on the front of the case.

Unlike the other Intel-based kits here, the mCubed uses Core Duo and Core 2 Duo processors designed for laptops rather than desktops. We fitted a Core 2 Duo T7200 and 1GB of RAM. It was whisper quiet and performed well in our Windows benchmarks. The integrated graphics aren't powerful enough to play the latest games and there's no PCI-E x16 slot for a dedicated graphics card. The only expansion slots are a mini PCI slot for a wireless adaptor and a PCI Express x1 slot.

The mCubed is very expensive, and you'll have to spend even more money, as notebook components are a lot more expensive than their desktop equivalents. Although your completed PC will be silent, the mCubed is just too expensive to recommend.

SUMMARY

- ☒ Small and quiet; DVD writer included
- ☒ Difficult to build
- ☒ Very expensive

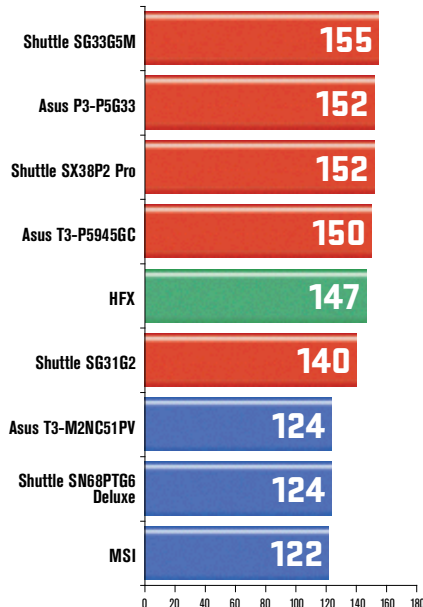
BAREBONES MEDIA CENTRE PC KIT Socket M processor socket, 2x DDR2 400/533/667 (SODIMM) DIMM slots, Intel GMA 950 graphics, 2x SATA ports, 1x 10/100/1,000 network, 5x USB2 ports, 1x FireWire port, 5.1 audio
PART CODE HFX Micro M1 – White/Lime
DETAILS www.quietpc.com

BENCHMARKS

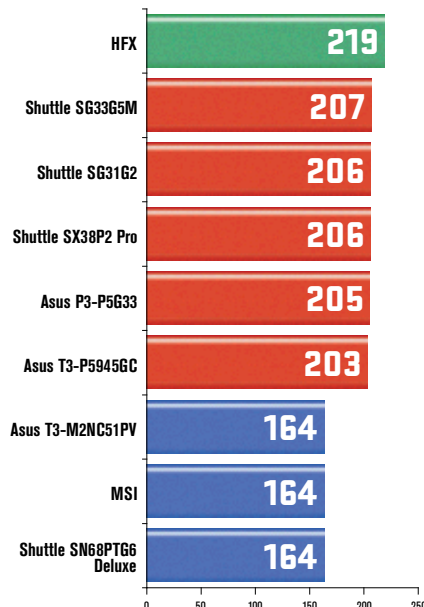
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2D Performance Shopper Application Tests

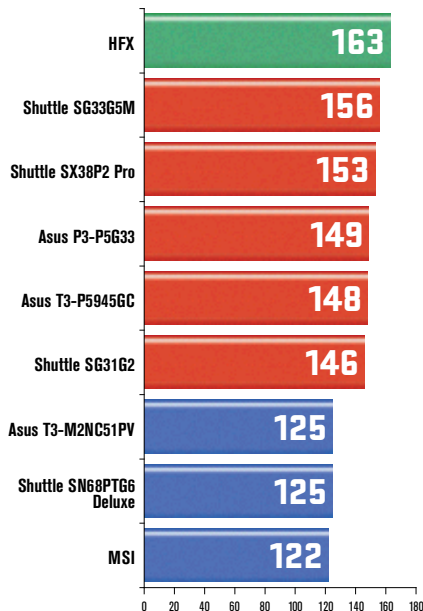
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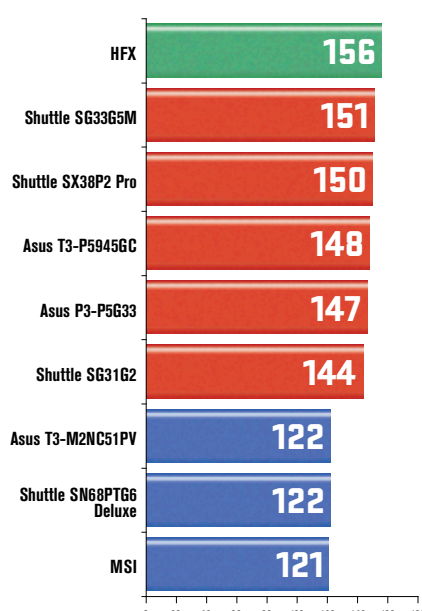
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Multitasking



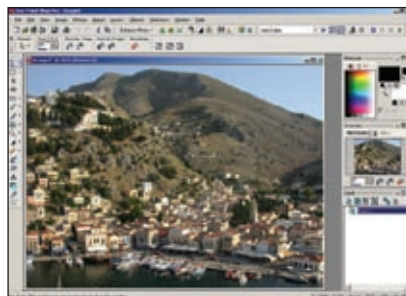
Overall



Computer Shopper's 2D benchmarks have been designed to show how PCs stand up to the toughest tasks Windows can throw at them. Today's PCs have no problem running office applications such as Word and Excel, so we have chosen to focus our tests on areas where you could experience difficulties.

Encoding a short video to MPEG2 format is a processor-intensive task that anyone transferring home videos to DVD will have to tackle. Our image-editing test simulates a session of photo enhancement using Paint Shop Pro X. In our third test, a set of audio files is ripped to MP3 format.

Finally, we have a multitasking test designed to test the benefits of Hyper-Threaded and dual-core processors. This test compresses a DVD at the same time as running our

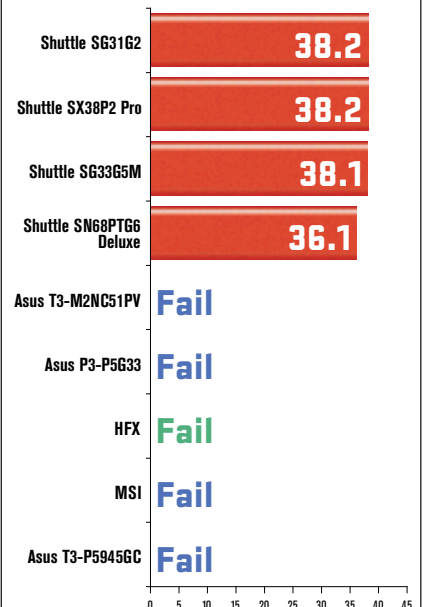


SETTINGS We run our application tests at 1,280x1,024 resolution and in 32-bit colour

image-editing test. Figures are relative to a reference Evesham Athlon 64 3500+, which scores 100 in all tests.

3D Performance Games

Call of Duty 2 (fps)



SETTINGS
1,280x1,024
resolution, 4x AA,
8x AF

Call of Duty 2 uses DirectX, and we select the punishing 'Extra' texture setting. With a wide range of effects and frenetic action, it tests every aspect of graphics performance.

How we test
Barebones kits

We built each barebones kit according to the manufacturer's instructions, noting if anything was poorly explained and whether we had any trouble fitting components.

To make our test results as consistent as possible we fitted similar components in each system. We fitted the Socket AM2 kits with an AMD Athlon 64 X2 3600+ processor, the Socket LGA775 kits with an Intel Core 2 Duo E6300 and the Socket M kit with an Intel Core 2 Duo T7200. We fitted 1GB of DDR2 RAM in each system. All the kits that accept a 3½in hard disk were tested with identical 250GB Hitachi SATA hard disks.

We tested each kit either with its own processor cooler and fan, if applicable, or a stock Intel or AMD cooler. We noted whether each kit was particularly noisy or quiet when idle and when running our tests.

Although none of the integrated graphics chips could run our 3D benchmarks, we wanted to see how well they would perform when fitted with a dedicated graphics card. Where possible, we fitted each system with an ATI Radeon X1950 Pro. For Shuttle's CrossFire-capable SX38P2 Pro, we also fitted two Radeon HD 3850 cards.

BAREBONES KITS

AMD BAREBONES



INTEL BAREBONES



INTEL MOBILE BAREBONES

MANUFACTURER	ASUS	SHUTTLE	MSI	ASUS	ASUS	SHUTTLE	SHUTTLE	SHUTTLE	HFX
Model	T3-M2NC51PV	SN68PTG6 Deluxe (Glamor Series)	Media Live	T3-P5945GC	P3-P5G33	SG31G2	SG33G5M (D'VO Series)	SX38P2 Pro (Prima Series)	mCubed Micro M1 Mini-ITX Fanless Bundle System
Rating	★★★★	★★★★★	★★★★	★★★★★	★★	★★★★	★★★★	★★★	★★
Processor socket	Socket AM2	Socket AM2	Socket AM2	LGA775	Socket LGA775	LGA775	LGA775	LGA775	Socket M
Processors supported	Athlon 64, Athlon 64 X2, Athlon 64 FX	Sempron, Athlon 64, Athlon 64 X2	Sempron, Athlon 64, Athlon 64 X2, Athlon 64 FX	Pentium 4, Pentium D, Core 2 Duo	Pentium 4, Pentium D, Core 2 Duo, Core 2 Quad	Pentium 4, Pentium D, Celeron D, Pentium dual core, Core 2 Duo, Core 2 Quad	Pentium 4, Pentium D, Celeron D, Pentium dual core, Core 2 Duo, Core 2 Quad	Pentium 4, Pentium D, Celeron D, Pentium dual core, Core 2 Duo, Core 2 Quad	Intel Core Duo, Intel Core 2 Duo
Processor heatsink supplied	Yes	Yes	No	No	No	Yes	Yes	Yes	Yes
Memory slots	4	2	4	2	4	2	2	4	2
Memory type	DDR2 667/800	DDR2 533/667/800/1066	DDR2 400/533/667/800	DDR2 533/667	DDR2 533/667/800	DDR2 667/800	DDR2 667/800/1066	DDR2 667/800/1066	DDR2 400/533/667 (SODIMM)
Maximum memory	4GB	4GB	4GB	4GB	8GB	4GB	4GB	8GB	4GB
Dual-channel support	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Motherboard form factor	MicroATX	Custom	MicroATX	MicroATX	ATX	Custom	Custom	Custom	Flex ATX
Chipset Northbridge	Nvidia C51PV	Nvidia GeForce 7050PV	Nvidia C51PV	Intel 945GC	Intel G33	Intel G31 Express	Intel G33 Express	Intel X38 Express	Intel 945GM
Chipset Southbridge	Nvidia MCP51	Nvidia nForce 630a	Nvidia MCP51	Intel ICH7R	Intel ICH9	Intel ICH7	Intel ICH9DH	Intel ICH9R	Intel ICH7M
Passively cooled Northbridge	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
BIOS	AMI	Phoenix	AMI	AMI	AMI	Phoenix	Phoenix	Phoenix	Phoenix
Integrated graphics (memory)	Nvidia GeForce 6150 (128MB shared)	Nvidia GeForce 7050PV (256MB shared)	Nvidia GeForce 6150 (256MB shared)	Intel GMA 950 (224MB shared)	Intel GMA3100 (256MB shared)	Intel GMA3100 (250MB shared)	Intel GMA3100 (250MB shared)	N/A	Intel GMA 950 (224MB shared)
PORTS									
USB2 ports (front/rear)	2/4	2/4	2/4	2/4	2/6	2/4	2/6	2/6	1/4
FireWire ports (front/rear)	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	0/1
Legacy ports	2x PS/2	None	None	2x PS/2	1x PS/2, parallel	2x PS/2	None	None	2x PS/2, serial
Graphics outputs	VGA, DVI	VGA, HDMI	HDMI, VGA, SCART, S-video, composite, component	VGA	VGA	VGA, DVI	HDMI, VGA	None	DVI, TV out
Other ports	eSATA	2x eSATA	1x eSATA	None	eSATA	None	2x eSATA	2x eSATA	None
INTERNAL EXPANSION									
Case size (HxWxD)	288x175x340mm	186x200x303mm	92x426x325mm	288x175x340mm	359x99x370mm	187x199x295mm	187x201x304mm	216x220x330mm	87x244x232mm
PCI	1	1	1	1	2	1	1	0	0
PCI-E x1	0	0	0	0	0	0	0	0	1
PCI-E x4	0	0	0	0	1	0	0	0	0
PCI-E x16	1	1	1	1	1	1	1	2	0
Dual 3D architecture	N/A	N/A	N/A	N/A	N/A	N/A	N/A	CrossFire X	N/A
IDE ports	1	1	2	1	1	1	1	1	1
Serial ATA ports	3	2	4	3	4	3	3	4	2
Maximum size of RAID arrays	2 (JBOD, RAID 0, 1)	2 (JBOD, RAID 0, 1, 0+1, 5)	2 (JBOD, RAID 0, 1)	2 (RAID 0, 1)	N/A	N/A	2 (RAID 0, 1)	3 (JBOD, RAID 0, 1, 5, 10)	N/A
Floppy ports	0	1	1	0	0	1	1	1	0
3½in drive bays	2	2	2	2	2	2	2	3	0
5¼in drive bays	1	1	0	1	1	1	1	1	0
Other bays	None	None	Notebook optical	None	None	None	None	1x mini PCI slot	Notebook hard disk, notebook optical, 1x mini PCI slot
FEATURES									
LAN/wireless network	1x 10/100/1,000, none	1x 10/100/1,000, 802.11b/g	1x 10/100/1,000, none	1x 10/100/1,000, none	1x 10/100/1,000, none	1x 10/100/1,000, none	1x 10/100/1,000, none	1x 10/100/1,000, none	1x 10/100/1,000, none
Sound (ports)	ADI AD 1888-B (7.1 line out, S/PDIF motherboard header)	RealTek ALC888DD (7.1 line out, optical S/PDIF out)	RealTek ALC883 (7.1 line out, coaxial/optical S/PDIF out)	ADI AD 1988-B (7.1 line out, coaxial/optical S/PDIF out)	RealTek ALC883 (7.1 line out)	RealTek ALC888 (7.1 line out, S/PDIF motherboard header)	RealTek ALC888DD (7.1 line out, optical S/PDIF out)	RealTek ALC888DD (7.1 line out, coaxial/optical S/PDIF out)	RealTek ALC888 (5.1 line out)
Surround-sound channels	7.1	7.1, Dolby Digital Live, DTS Connect	7.1	7.1	7.1	7.1	7.1, Dolby Digital Live, DTS Connect	7.1, Dolby Digital Live, DTS Connect	5.1
Card reader	CompactFlash, Secure Digital, MultiMedia Card, Memory Stick	None	CompactFlash, Secure Digital, MultiMedia Card, Memory Stick, Smart Media	CompactFlash, Secure Digital, MultiMedia Card, Memory Stick	CompactFlash, Secure Digital, MultiMedia Card, Memory Stick, Smart Media	None	None	None	Secure Digital
Modem	No	No	No	No	No	No	No	No	No
Power supply wattage	250W	300W	300W	250W	220W	250W	250W	450W	90W
Cables included	1x SATA, 1x SATA power	2x SATA, 1x IDE, 1x SATA power	1x SATA, 1x IDE	1x SATA, 1x IDE, 1x molex-to-SATA power	2x SATA, 1x IDE	1x SATA, 1x IDE	1x SATA, 3x IDE, HDMI-to-DVI adaptor	3x SATA II, 2x IDE, 1x PCI Express power, 1x molex splitter, 1x USB	1x SATA, 1x IDE, 1x molex-to-SATA power, 1x molex splitter, TV-out-to-component and S-video adaptor
BUYING INFORMATION									
Price inc VAT	£100	£241	£250	£108	£130	£191	£270	£340	£500
Supplier	www.yoyotech.co.uk	www.lambda-tek.com/componentshop	www.ebuyer.com	www.scan.co.uk	www.scan.co.uk	www.lambda-tek.com/componentshop	www.eclipsecomputers.com	www.microdirect.co.uk	www.quietpc.com
Details	www.asus.com	www.shuttle.eu	www.msi.com.tw	www.asus.com	www.asus.com	www.shuttle.eu	www.shuttle.eu	www.shuttle.eu	www.quietpc.com
Part code	T3-M2NC51PV	SN68PTG6 Deluxe	MS-6421-020	T3-P5945GC	P3-PH5	SG31G2	SG33G5M	SX38P2 Pro	HFX Micro M1 - White/Lime

Labs verdict Barebones kits

Many of the barebones kits in this round-up have desirable features. Shuttle's SX38P2 Pro is CrossFire-capable and can play demanding 3D games smoothly, but it's noisy and tricky to build. MSI's Media Live is a media centre barebones kit that's easy to build and has plenty of video outputs, but it can't be easily upgraded to handle high-definition video.

In the end, two clear winners emerged. If you need a small PC for home or office use,

Asus's T3-P5945GC is the one to buy. It's easy to assemble, quiet, attractive and, best of all, cheap. It wins our Budget Buy award.

If you need a quiet media centre PC, Shuttle's SN68PTG6 Deluxe is our pick. Its integrated graphics aren't powerful enough to play HD video, but it can be upgraded. It's easy to build, quiet and comes with useful extras, including a remote control and built-in wireless networking. It wins our Best Buy award. **CS**

AMD BAREBONES

BEST BUY
SHUTTLE
SN68PTG6 Deluxe
(Glamor Series)

★★★★★



INTEL BAREBONES

BUDGET BUY
ASUS
T3-P5945GC

★★★★★

